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ORGANIC EL DISPLAY DEVICE AND ITS LIGHTING METHOD

Abstract:

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PROBLEM TO BE SOLVED: To improve visibility and output efficiency of emitted light by providing light outgoing surface side with a circular polarization means comprising a liquid crystal display element and a phase difference plate, holding a nematic liquid crystal added with dichroism coloring matter between boards on which liquid crystal display elements are arranged with uniaxial orientation.

SOLUTION: A circular polarization means 3 using a liquid crystal display element is arranged on the translucent board 21 side, that is the outgoing side of emitted light of an organic EL element 2. The circular polarization means 3 comprises the liquid crystal display element 32, and 1/4 wavelength plate 31 provided between the liquid crystal display element 32 and the organic EL element 2. The liquid crystal display element 32 holds a liquid crystal layer 37 between glass boards 33, 34 having ITO transparent electrodes 35 and an orientation film 36. In a liquid crystal layer 37, a dichroism coloring matter 39 is added to the nematic liquid crystal 38 showing positive dielectric anisotropy, and an uniaxial orientation process is provided for the orientation film 36. Thus, liquid crystal molecules are horizontally oriented in a state that voltage is not impressed on the liquid crystal layer 37 and liquid crystal molecules are vertically oriented when a voltage is impressed.

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